

WHAT IS CLAIMED IS:

1. A two-cycle oil, the two-cycle oil comprising a base oil and an additive for reducing a pollutant emission, the additive comprising:

- 5 a plant oil extract;
 an antioxidant; and
 a thermal stabilizer.

2. The two-cycle oil of claim 1, wherein the plant oil extract comprises an oil extract of a plant of the *Leguminosae* family.

10 3. The two-cycle oil of claim 1, wherein the plant oil extract is selected from the group consisting of oil extract of vetch and oil extract of barley.

4. The two-cycle oil of claim 1, wherein the plant oil extract comprises chlorophyll.

5. The two-cycle oil of claim 1, wherein the antioxidant comprises β -carotene.

15 6. The two-cycle oil of claim 1, wherein the thermal stabilizer comprises jojoba oil.

7. The two-cycle oil of claim 1, wherein the thermal stabilizer comprises an ester of a C20-C22 straight chain monounsaturated carboxylic acid.

20 8. The two-cycle oil of claim 1, wherein the plant oil extract comprises oil extract of vetch, wherein the antioxidant comprises β -carotene, and wherein the thermal stabilizer comprises jojoba oil.

9. The two-cycle oil of claim 1, further comprising a diluent.

10. The two-cycle oil of claim 9, wherein the diluent is selected from the group consisting of toluene, gasoline, diesel fuel, jet fuel, and mixtures thereof.

25 11. The two-cycle oil of claim 1, further comprising an oxygenate.

12. The two-cycle oil of claim 11, wherein the oxygenate is selected from the group consisting of methanol, ethanol, methyl tertiary butyl ether, ethyl tertiary butyl ether, and tertiary amyl methyl ether, and mixtures thereof.

30 13. The two-cycle oil of claim 1, further comprising at least one additional additive selected from the group consisting of octane improvers, cetane improvers, detergents, corrosion inhibitors, metal deactivators, ignition accelerators, dispersants,

anti-knock additives, anti-run-on additives, anti-pre-ignition additives, anti-misfire additives, antiwear additives, antioxidants, demulsifiers, carrier fluids, solvents, fuel economy additives, emission reduction additives, lubricity improvers, and mixtures thereof.

5 14. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is from about 12:1 to about 0.05:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is from about 5:1 to about 0.5:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is from about 5:1 to about 0.5:1.

10 15. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is from about 6:1 to about 0.1:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is from about 2.7:1 to about 0.1:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is from about 2.2:1 to about 1:1.

15 16. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is from about 2.1:1 or 1:1 to about 0.5:1 or 0.3:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is from about 1.5:1 or 0.8:1 to about 0.5:1 or 0.3:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is from about 1.4:1 or 1.2:1 to about 1.1:1.

20 17. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is about 2.1:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is about 1.5:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is about 1.4:1.

25 18. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is about 6.0:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is about 2.7:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is about 2.2:1.

19. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is about 1:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is about 0.8:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is about 1.2:1.

5 20. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is about 0.5:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is about 0.5:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is about 1.1:1.

10 21. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is about 0.3:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is about 0.3:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is about 1.1:1.

15 22. The two-cycle oil of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of β -carotene in the two-cycle oil is about 0.1:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the two-cycle oil is about 0.1:1, and wherein a ratio of milliliters jojoba oil to grams of β -carotene in the two-cycle oil is about 1:1.

20 23. The two-cycle oil of claim 8, comprising from about 0.00005 ml to about 0.05 ml jojoba oil per 3785 ml of two-cycle oil, from about 0.0005 g to about 0.05 g of β -carotene per 3785 ml of two-cycle oil, and from about 0.0005 g to about 0.02 g oil extract of vetch per 3785 ml of two-cycle oil.

25 24. The two-cycle oil of claim 8, comprising from about 0.00098 ml to about 0.022 ml jojoba oil per 3785 ml of two-cycle oil, from about 0.0013 g to about 0.022 g of β -carotene per 3785 ml of two-cycle oil, and from about 0.0014 g to about 0.0077 g oil extract of vetch per 3785 ml of two-cycle oil.

30 25. The two-cycle oil of claim 8, comprising about 0.00098 ml jojoba oil per 3785 ml of two-cycle oil, about 0.00069 g β -carotene per 3785 ml of two-cycle oil, and about 0.0014 g oil extract of vetch per 3785 ml of two-cycle oil.

26. The two-cycle oil of claim 8, comprising about 0.0029 ml jojoba oil per 3785 ml of two-cycle oil, about 0.0013 g β -carotene per 3785 ml of two-cycle oil, and about 0.0077 g oil extract of vetch per 3785 ml of two-cycle oil.

5 27. The two-cycle oil of claim 8, comprising about 0.0018 ml jojoba oil per 3785 ml of two-cycle oil, about 0.0015 g β -carotene per 3785 ml of two-cycle oil, and about 0.0014 g oil extract of vetch per 3785 ml of two-cycle oil.

10 28. The two-cycle oil of claim 8, comprising about 0.012 ml jojoba oil per 3785 ml of two-cycle oil, about 0.011 g β -carotene per 3785 ml of two-cycle oil, and about 0.0056 g oil extract of vetch per 3785 ml of two-cycle oil.

15 29. The two-cycle oil of claim 8, comprising about 0.022 ml jojoba oil per 3785 ml of two-cycle oil, about 0.021 g β -carotene per 3785 ml of two-cycle oil, and about 0.0056 g oil extract of vetch per 3785 ml of two-cycle oil.

15 30. The two-cycle oil of claim 8, comprising about 0.022 ml jojoba oil per 3785 ml of two-cycle oil, about 0.021 g β -carotene per 3785 ml of two-cycle oil, and about 0.0031 g oil extract of vetch per 3785 ml of two-cycle oil.

31. A two-cycle fuel, the two-cycle fuel comprising a base fuel and a two-cycle oil, wherein the two-cycle oil comprises a base oil and an additive for reducing a pollutant emission, the additive comprising:

20 a plant oil extract;
an antioxidant; and
a thermal stabilizer.

32. The two-cycle fuel of claim 31, wherein the base fuel comprises gasoline.

25 33. The two-cycle fuel of claim 31, wherein the base fuel comprises reformulated gasoline.

34. The two-cycle fuel of claim 31, wherein the base fuel comprises CaRFG3 gasoline.

35. The two-cycle fuel of claim 31, wherein the weight ratio of two-cycle oil to base fuel is from about 1:10 to about 1:40.

30 36. The two-cycle fuel of claim 31, wherein the weight ratio of two-cycle oil to base fuel is from about 1:15 to about 1:25.

37. The two-cycle fuel of claim 31, wherein the weight ratio of two-cycle oil to base fuel is about 1:20.

38. A method for operating a vehicle equipped with a two-cycle engine, the method comprising the step of:

5 combusting an additized two-cycle fuel in the engine such that a quantity of a pollutant is produced, the additized two-cycle fuel comprising a base fuel and a two-cycle oil, the two-cycle oil comprising a base oil, a plant oil extract, an antioxidant, and a thermal stabilizer, wherein the quantity of the pollutant produced by combustion of 3785 ml of the two-cycle fuel is less than a quantity of the pollutant produced upon combustion of 3785 ml of an unadditized two-cycle fuel, the unadditized two-cycle fuel comprising the base fuel and the base oil, wherein a weight ratio of base fuel to base oil in the unadditized two-cycle fuel is the same as a weight ratio of base fuel to base oil in the additized two-cycle fuel.
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